

**ACCESSION NUMBER:** 0001

**DOCUMENT TYPE:** SA

**TITLE:** Final Waste Management Programmatic Environmental Impact Statement for Managing Treatment, Storage, and Disposal of Radioactive and Hazardous Waste

**ORIG. DOC. NO.:** DOEIS0200F

**DOCUMENT DATE:** 970500

**ORIGINATING AGENCY:** Department of Energy

**PAGES:** 3539

**REEL:**    **FRAME:**

**AUTHOR:** DOE Office of Environmental Management

**ABSTRACT:** Volumes I - V, Summary, Reverse Index: Guide to Commentors Organized by Commentors/Response Number. The Final Waste Management Programmatic Environmental Impact Statement (WM PEIS) examines the potential environmental and cost impacts of strategic management alternatives for managing five types of radioactive and hazardous wastes that have resulted and will continue to result from nuclear defense and research activities at a variety of sites around the United States. The five waste types are low-level mixed waste, transuranic waste, high-level waste, and hazardous waste. The WM PEIS provides information on the impacts of various siting alternatives which the Department of Energy (DOE) will use to decide at which sites to locate additional treatment, storage, and disposal capacity for each waste type. This information includes the cumulative impacts of combining future siting configurations for the five waste types and the collective impacts of the other past, present, and reasonably foreseeable future activities. The selected waste management facilities being considered for these different waste types are treatment and disposal facilities for low-level mixed waste; treatment and disposal facilities for low-level waste; treatment and storage facilities for transuranic waste in the event that treatment is required before disposal; storage facilities for treated (vitrified) high-level waste canisters; and treatment of nonwastewater hazardous waste by DOE and commercial vendors. In addition to the no action alternative, which includes only existing or approved waste management facilities, the alternatives for each of the waste type configurations include decentralized, regionalized, and centralized alternatives for using existing and operating new waste management facilities. However, the siting, construction and operations of any new facility at a selected site will not be decided until completion of a sitewide or project-specific environmental impact review.

**KEYWORDS:** WASTE MANAGEMENT, STORAGE, DISPOSITION, TREATMENT, TRANSPORTATION, STORAGE FACILITIES, LOW-LEVEL MIXED WASTE, LOW-LEVEL, TRANSURANIC, HIGH-LEVEL, HAZARDOUS, ENVIRONMENTAL EFFECTS, JUSTICE, HEALTH RISKS, NO ACTION ALTERNATIVE, DECENTRALIZED, REGIONALIZED, CENTRALIZED, LAND USE, INFRASTRUCTURE, SOCIOECONOMICS, GEOLOGY, AIR QUALITY, SAFEGUARDS, RADIONUCLIDES, HYDROLOGY, TOXICITY, CANCER, GENETIC EFFECTS

**CROSSINDEX:**

**PROVENANCE:**

**LOCATIONS:** Argonne National Laboratory-East, Chicago, IL; Brookhaven National Laboratory, Upton, NY; Fernald Environmental Management Project, Fernald, OH; Hanford, Richland, WA; Idaho National Engineering Laboratory, Idaho Falls, ID; Lawrence Livermore National Laboratory, Livermore, CA; Los Alamos National

Laboratory, Los Alamos, NM; Nevada Test Site, Nye County, NV; Oak Ridge Reservation, Oak Ridge, TN; Paducah Gaseous Diffusion Plant, Paducah, KY; Portsmouth Gaseous Diffusion Plant, Portsmouth, OH; Rocky Flats Environmental Technology Site, Golden, CO; Sandia National Laboratories, Albuquerque, NM; Savannah River Site, Aiken, SC; Waste Isolation Pilot Plant, NM; West Valley Demonstration Project, West Valley, NY; Ames Laboratory, Ames, IA; Battelle Columbus Laboratories, Columbus, OH; Bettis Atomic Power Laboratory, West Mifflin, PA; Charleston Naval Shipyard, Charleston, SC; Colonie Interim Storage Site, Colonie, NY; Energy Technology Engineering Center, Los Angeles, CA; Fermi National Accelerator Laboratory, Chicago, IL; General Atomics, San Diego, CA; General Electric Vallecitos Nuclear Center, Vallecitos, CA; Grand Junction projects Office, Grand Junction, CO; Inhalation Toxicology Research Institute, Albuquerque, NM; Kansas City Plant, Kansas City, MO; Knolls Atomic Power Laboratory, Kesselring Site, West Milton, NY and Niskayuna, NY; Knolls Atomic Power Laboratory, Windsor, CT; Laboratory for Energy-Related Health Research, Davis, CA; Lawrence Berkeley Laboratory, Berkeley, CA; Mare Island Naval Shipyard, Vallejo, CA; Middlesex Sampling Plant, Middlesex, NJ; Mound Plant, Miamisburg, OH; Norfolk Naval Shipyard, Portsmouth, VA; Palos Forest, Chicago, IL; Pearl Harbor Naval Shipyard, Pearl Harbor, Oahu, HI; Pinellas Plant, St. Petersburg/Largo, FL; Portsmouth Naval Shipyard, Kittery, ME; Princeton Plasma Physics Laboratory, Princeton, NJ; Puget Sound Naval Shipyard, Bremerton, WA; Reactive Metals, Inc., Ashtabula, OH; Sandia National Laboratories(CA), Livermore, CA; Stanford Linear Accelerator Center, Palo Alto, CA; University of Missouri, Columbia, MO; Weldon Spring Remedial Action Project, St. Louis, MO.

**ACCESSION NUMBER:** 0002

**DOCUMENT TYPE:** RT

**TITLE:** Data Report for Plutonium Conversion Facility

**ORIG. DOC. NO.:** LAUR951721

**DOCUMENT DATE:** 960200

**ORIGINATING AGENCY:** Los Alamos National Laboratory

**PAGES:** 0071

**REEL:**    **FRAME:**

**AUTHORS:** Smith W B, Wilkey D D, Siebe D

**ABSTRACT:** The Department of Energy (DOE) is examining options for placing weapons-usable nuclear materials in a form or condition that is substantially and inherently more difficult to use in weapons. The Department determined that potential decisions and their implementation regarding the long term storage and disposition of this surplus material could have a significant impact on the environment. Therefore, DOE implemented a comprehensive plan to consider a range of reasonable alternatives in a Programmatic Environmental Impact Statement (PEIS). This report details the specific response to a request by DOE through Tetra Tech, Inc. for a preconceptual facility design to convert and/or stabilize surplus plutonium. The design data is intended to provide a basis for estimating the environmental effects associated with the construction and operation of a plutonium conversion facility.

**KEYWORDS:** PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT (PEIS), PLUTONIUM, CONVERSION FACILITY, WASTE MANAGEMENT SYSTEM, WASTE TRANSPORTATION, RADIOLOGICAL MATERIAL, HAZARDOUS MATERIAL, ACCIDENT MITIGATION, SAFEGUARDS, NUCLEAR CRITICALITY, LAND USE,

**MATERIAL TRANSPORTATION, MATERIAL MANAGEMENT**

**CROSSINDEX:**

**PROVENANCE:**

**LOCATIONS:** Los Alamos National Laboratory, Los Alamos, NM

**ACCESSION NUMBER:** 0003

**DOCUMENT TYPE:** DD

**TITLE:** Fissile Material Disposition Program: Pit Disassembly and Conversion Facility Data Call Input

**ORIG. DOC. NO.:** LAUR96474

**DOCUMENT DATE:** 960200

**ORIGINATING AGENCY:** Los Alamos National Laboratory, Los Alamos, NM

**PAGES:** 0065

**REEL:**    **FRAME:**

**AUTHORS:** Cremers T L, Bronson M C, Riley D C

**ABSTRACT:** This document describes a facility for the recovery and conversion of plutonium from retired primary weapons components. It includes the assumptions used to develop the requirements for the facility. The layout of the facility and the facility design safety features, such as seismic events, wind, criticality, and ventilation requirements, are presented. Also discussed are the amounts and types of wastes produced during construction and operation, employment needs, safeguards systems, land requirements, and process description.

**KEYWORDS:** FISSILE MATERIAL, PIT DISASSEMBLY, CONVERSION FACILITY, NUCLEAR CRITICALITY, WASTE MANAGEMENT, SAFEGUARDS, WASTE TRANSPORTATION, ACCIDENT MITIGATION

**CROSSINDEX:**

**PROVENANCE:**

**LOCATIONS:** Los Alamos National Laboratory, Los Alamos, NM

**ACCESSION NUMBER:** 0004

**DOCUMENT TYPE:** RT

**TITLE:** New Mixed Oxide Fuel Fabrication Facility Data Report for The Fissile Material Disposition Program Programmatic Environmental Impact Statement

**ORIG. DOC. NO.:** LAUR954442

**DOCUMENT DATE:** 960000

**ORIGINATING AGENCY:** Los Alamos National Laboratory, Los Alamos, NM

**PAGES:** 0088

**REEL:**    **FRAME:**

**AUTHORS:** Los Alamos National Laboratory Nuclear Materials and Stockpile Management Programs Technology and Safety Assessment Division and Nuclear Materials Technologies Division

**ABSTRACT:** Work done in support of the fissile Material Disposition Program Programmatic Environmental Impact Statement (PEIS)

**KEYWORDS:** FISSILE MATERIAL, PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT (PEIS), WASTE MANAGEMENT, WASTE TRANSPORTATION, MATERIALS RECEIVING, MATERIALS STORAGE, PLUTONIUM OXIDE PURIFICATION, PELLET FABRICATION, ROD

**FABRICATION, ACCIDENT MITIGATION**

**CROSSINDEX:**

**PROVENANCE:**

**LOCATIONS:** Los Alamos National Laboratory, Los Alamos, NM

**ACCESSION NUMBER:** 0005

**DOCUMENT TYPE:** EV, SU

**TITLE:** Performance Evaluation of the Technical Capabilities of DOE Sites for Disposal of Mixed Low-Level Waste

**ORIG. DOC. NO.:** DOEID105211; SAND9607211

**DOCUMENT DATE:** 960300

**ORIGINATING AGENCY:** Department of Energy

**PAGES:** 0032

**REEL:**    **FRAME:**

**AUTHORS:** Department of Energy (DOE) Office of Waste Management Federal Facility Compliance Act Disposal Workgroup with Sandia National Laboratories

**ABSTRACT:** Volume I: Executive Summary. A team of analysts designed and conducted a performance evaluation to estimate the technical capabilities of fifteen Department of Energy sites for disposal of mixed low-level waste (i.e., waste that contains both low-level radioactive materials and hazardous constituents). Volume I summarizes the process for selecting the fifteen sites, the methodology used in the evaluation, and the conclusions derived from the evaluation. Volume II provides details about the site-selection process, the performance-evaluation methodology, and the overall results of the analysis. Volume III contains detailed evaluations of the fifteen sites and discussions of the results for each site.

**KEYWORDS:** LOW-LEVEL WASTE, MIXED LOW-LEVEL WASTE, WASTE MANAGEMENT, FEDERAL FACILITY COMPLIANCE ACT (FFCAct), WASTE TRANSPORTATION, RADIONUCLIDES

**CROSSINDEX:**

**PROVENANCE:**

**LOCATIONS:** Sandia National Laboratories, Albuquerque, NM and Livermore, CA; Argonne National Laboratory-East, Chicago, IL; Fernald Environmental Management Site, Fernald, OH; Idaho National Engineering Laboratory, Idaho Falls, ID; Los Alamos National Laboratory, Los Alamos, NM; Lawrence Livermore National Laboratory, Livermore, CA; Nevada Test Site, Nye County, NV; Oak Ridge Reservation, Oak Ridge, TN; Paducah Gaseous Diffusion Plant, Paducah, KY; Portsmouth Gaseous Diffusion Plant, Portsmouth, OH; Rocky Flats Environmental Technology Site, Golden, CO; Savannah River Site, Aiken, SC; West Valley Demonstration Project, West Valley, NY

**ACCESSION NUMBER:** 0006

**DOCUMENT TYPE:** RT

**TITLE:** Laboratory and Field Studies Related to the Hydrologic Resources Management Program

**ORIG. DOC. NO.:** LA13064PR

**DOCUMENT DATE:** 951100

**ORIGINATING AGENCY:** Los Alamos National Laboratory, Los Alamos, NM

**PAGES:** 0027

**REEL:    FRAME:**

**AUTHORS: Thompson J L**

**ABSTRACT:** In this report we describe the work done at Los Alamos National Laboratory in Fiscal Year 1995 for the Hydrologic Resource Management Program funded by the US Department of Energy/Nevada Operations office. Budgetary cuts have required us to scale back our activities, particularly field work at the Nevada Test Site. We have collaborated with a number of government agencies and universities in work related to radionuclide migration through geologic media. In cooperation with Lawrence Livermore National Laboratory, we have demonstrated the utility of high-sensitivity gamma logging and have successfully improved the design of a bailer routinely used for water sampling. We analyzed a suite of side-wall samples from the BASEBALL drill-back and have interpreted the distribution pattern of test-related radionuclides. Though heterogeneously distributed, they show a general separation of volatile and refractory fractions. The distribution pattern suggests that there has been little movement of radioactive material within this cavity, which is 13 years old and below the static water level. This characterization of the BASEBALL cavity/chimney complex may have important implications for radionuclide migration elsewhere at the Nevada Test Site.

**KEYWORDS: RADIONUCLIDE MIGRATION, HYDROLOGY, GROUNDWATER TRANSPORT, TRITIUM, GAMMA-EMITTERS**

**CROSSINDEX:**

**PROVENANCE:**

**LOCATIONS: Nevada Test Site, Nye County, NV; Los Alamos National Laboratory, Los Alamos, NM; Lawrence Livermore National Laboratory, Livermore, CA;**

**ACCESSION NUMBER: 0007**

**DOCUMENT TYPE: EM, GR**

**TITLE: A Fracture/Porous media Model of Tritium Transport in the Underground Weapons Testing Areas, Nevada Test Site**

**ORIG. DOC. NO.:**

**DOCUMENT DATE: 950824**

**ORIGINATING AGENCY: Department of Energy Nevada Operations Office**

**PAGES: 0062**

**REEL:    FRAME:**

**AUTHORS: GeoTrans, Inc., Boulder, CO**

**ABSTRACT:** The migration of tritium in the Underground Weapon Testing Areas, Nevada Test Site (NTS) is predicted using a one-dimensional finite element transport model---MC\_TRANS. MC\_TRANS, developed in this study, is a transport code that can model advection and longitudinal dispersion, radioactive decay, and matrix diffusion from fractures into the neighboring porous blocks. Simulations were performed along three major groundwater flowpaths in the area, originating from test cavities to receptors outside of the current control of the U.S. Government and towns of Beatty, Amargosa Valley, and the NTS boundary south of Mercury. Published values of hydraulic gradients, decay constants, diffusion coefficients, and hydraulic conductivities from laboratory and field tests were used as input parameters. As the measured parameters are associated with a range of uncertainties, sensitivity analyses were performed by varying the most uncertain and sensitive parameter hydraulic conductivity. Simulation results show that the dominant attenuation processes for tritium transport at NTS are radioactive decay and matrix diffusion. For the flowpath from Pahute Mesa to Oasis Valley,

detectable tritium concentrations (~ 2 pCi/L) will not occur further than 12 km from the shot cavities and the Maximum Concentration Limit for drinking water (20,000 pCi/L) will not be exceeded further than 6 km. For the flowpath from Pahute Mesa to Amargosa Valley, tritium migration distances are about one-half as far, because of low hydraulic gradient. A much shorter tritium transport distance is predicted along the south Yucca Flat to Mercury flowpath.

Measurable tritium concentrations will not occur beyond less than 2.5 km from the source. This short migration distance is the result of the low hydraulic gradient in this area. Increase of hydraulic conductivities or velocities will significantly increase the distances and concentrations along all the three flowpaths. However,, even using the highest conductivities used in the simulations, no detectable tritium concentrations occur at areas outside of the U.S. Government control. Nevertheless, the modeling results are constrained by the model limitations, namely, the one dimensional modeling approach and significant uncertainties associated with some input parameters.

**KEYWORDS: HYDROLOGY, TRITIUM, GROUNDWATER TRANSPORT, GEOLOGY**  
**CROSSINDEX:**

**PROVENANCE:**

**LOCATIONS: Nevada Test Site, Nye County, NV; Pahute Mesa, NV; Oasis Valley, NV; Amargosa, NV; Yucca Flat, NV; Mercury, NV**

**ACCESSION NUMBER: 0008**

**DOCUMENT TYPE: DD, RT**

**TITLE: Data Report on Upgrade Alternative for the Pantex Plant Pu Storage Operations**

**ORIG. DOC. NO.:**

**DOCUMENT DATE: 951200**

**ORIGINATING AGENCY:**

**PAGES: 0055**

**REEL: FRAME:**

**AUTHORS: Mason & Hanger-Silas Mason Co.**

**ABSTRACT:** The following section describes the general Complex-21 mission and assumptions to be used to develop the PEIS data and cost estimates for the Storage and Disposition of Weapons-Usable Fissile Materials. The mission of the Complex-21 Upgrade is to satisfy the future requirements for nuclear weapons production in a safe, environmentally acceptable, and cost-effective manner. The three elements comprising Complex-21 are the Nonnuclear Manufacturing (NNM) element, the Nuclear Materials Production and Manufacturing (NM&P) element, and the Research, Development, and Testing (RD&T) element. The Complex-21 NNM element provides for the acquisition, production, storage, testing, assembly, and certification of nonnuclear components and subsystems of nuclear weapons. The NNM element is beyond the scope of these reports.

**KEYWORDS: PLUTONIUM, SAFEGUARDS, NUCLEAR CRITICALITY, WASTE MANAGEMENT, ENVIRONMENTAL SAFETY, HEALTH SAFETY, PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT (PEIS)**

**CROSSINDEX:**

**PROVENANCE:**

**LOCATIONS: Pantex Plant, Amarillo, TX**

**ACCESSION NUMBER: 0009**

**DOCUMENT TYPE: RT**

**TITLE: Tritium Production in Plowshare Applications**

**ORIG. DOC. NO.:**

**DOCUMENT DATE: 711025**

**ORIGINATING AGENCY: Lawrence Radiation Laboratory, Livermore, CA**

**PAGES: 0022**

**REEL: FRAME:**

**AUTHORS: Lessler R M, Green J B, Holzer F**

**ABSTRACT:** Production of tritium by Plowshare explosives is the subject of continuing research and evaluation, with reference especially to the applications now being considered: gas and oil well-stimulation, gas storage, mineral leaching, production of geothermal power, waste disposal, and excavation. About 5,000 to 20,000 Ci/kt of tritium are produced by the fusion reaction, while only about 1 Ci/kt of tritium is produced in the fission process. About  $2 \times 10^{23}$  n/kt escape from both ordinary fission and fusion explosives. Both static and dynamic multi-energy neutronic-group Monte Carlo methods are used to calculate the neutrons escaping into the environment and to evaluate the efficiencies of various internal and external shielding materials in absorbing these neutrons. These calculations are also used to study the effects of rock components, especially lithium and boron, and the rock temperature during the time of neutron capture. In a typical gas-bearing medium, about 1% to 3% of the neutrons escape into the rock will produce tritium. The total residual tritium from the 29-kt Gasbuggy Event was 1400 Ci/kt. Work on reducing this amount has progressed to the point where about 12 Ci/kt were produced in the recently fired 80-kt Miniata Event.

**KEYWORDS: TRITIUM, PLOWSHARE PROGRAM, WASTE DISPOSAL, EXCAVATION, GEOTHERMAL POWER, WELL STIMULATION, MINERAL LEACHING, STORAGE**

**CROSSINDEX:**

**PROVENANCE:**

**LOCATIONS: northwestern New Mexico; western Colorado; Piceance Basin, CO; Alaska; Soviet Union; Panama; Australia**

**ACCESSION NUMBER: 0010**

**DOCUMENT TYPE: DD**

**TITLE: Hanford Site Estimates for the Storage of Rocky Flats Plutonium**

**ORIG. DOC. NO.: DOERL92995**

**DOCUMENT DATE: 950929**

**ORIGINATING AGENCY: Department of Energy**

**PAGES: 0008**

**REEL: FRAME:**

**AUTHORS: Tetra Tech and Fluor Daniel, Inc.**

**ABSTRACT:** Completed Hanford Site estimates of the impacts of accepting approximately 10 metric tons of Rocky Flats plutonium at Hanford. These are provided for the fissile materials storage and disposition PEIS. The data are increments to the previous Hanford Site data contained in document DOE/RL-93-0100, Revision 1, "Hanford Site Data for the Weapons Complex Reconfiguration Programmatic Environmental Impact Statement," July 1994. As noted during the Site visit, Hanford has enough space in existing facilities to accommodate the Rocky Flats material without new construction. There are approximately 2000 spaces in the Plutonium

Finishing Plant (PFP), with some of these spaces becoming available as DNFSB 94-1 activities consolidate material into fewer containers (currently there are approximately 750 available). An additional 1500 spaces are available in the existing SNM storage vault (never activated) at the Fuels and Materials Examination Facility (FMEF). However, this option was not analyzed because PFP could only provide interim storage. Long term storage (approximately 50 years) would require upgrades to the facility to meet current safety, security, and occupational exposure requirements of the PEIS.

**KEYWORDS: PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT (PEIS), PLUTONIUM, STORAGE, WASTE PRODUCTION**

**CROSSINDEX:**

**PROVENANCE:**

**LOCATIONS: Hanford Site, Richland, WA; Rocky Flats Environmental Technology Site, Golden, CO**

**ACCESSION NUMBER: 0011**

**DOCUMENT TYPE: PP, DD**

**TITLE: Westinghouse Savannah River Company Actinide Packaging and Storage Facility: Regional Vault Case (Informal Proposal for Facility Upgrade), Draft Supplement, Cost and Environmental Data**

**ORIG. DOC. NO.:**

**DOCUMENT DATE: 950919**

**ORIGINATING AGENCY: Westinghouse Savannah River Company**

**PAGES: 0010**

**REEL: FRAME:**

**AUTHORS: Westinghouse Savannah River Company**

**ABSTRACT: Informal proposal: Cost and environmental data tables and conceptual floor plans in support of facility upgrade**

**KEYWORDS: SAVANNAH RIVER, WASTE GENERATION, CHEMICAL EMISSIONS, CHEMICAL STORAGE**

**CROSSINDEX:**

**PROVENANCE:**

**LOCATIONS: Savannah River Site, Aiken, SC**

**ACCESSION NUMBER: 0012**

**DOCUMENT TYPE: TB**

**TITLE: ANL-W Upgrade Data Report for PEIS**

**ORIG. DOC. NO.:**

**DOCUMENT DATE: 951000**

**ORIGINATING AGENCY: Department of Energy**

**PAGES: 0009**

**REEL: FRAME:**

**AUTHORS: Fluor Daniel, Inc.**

**ABSTRACT: Data tables 5-1 through 7-4 pertaining to the ANL-West Upgrade for the Programmatic Environmental Impact Statement (PEIS).**

**KEYWORDS: PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT (PEIS), ANL-WEST UPGRADE**



CROSSINDEX:  
PROVENANCE:  
LOCATIONS:

ACCESSION NUMBER: 0013

DOCUMENT TYPE: BG

TITLE: **Storage and Disposition of Weapons-Usable Fissile Materials Draft Programmatic Environmental Impact Statement**

ORIG. DOC. NO.: DOEIS0229D

DOCUMENT DATE: 960200

ORIGINATING AGENCY: Department of Energy

PAGES: 0001

REEL: FRAME:

AUTHORS: DOE Office of Fissile Materials Disposition

ABSTRACT: This is additional reference material in support of the U.S. Department of Energy's *Storage and Disposition of Weapons-Usable Fissile Materials Draft Programmatic Environmental Impact Statement*.

KEYWORDS: PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT (PEIS), FISSILE MATERIAL, HANFORD SITE, ARGONNE NATIONAL LABORATORY-WEST, SAVANNAH RIVER SITE, HEALTH RISKS, PLUTONIUM STORAGE, PANTEX PLANT

CROSSINDEX:

PROVENANCE:

LOCATIONS: Hanford Site, Richland, WA; Argonne National Laboratory-West Plutonium Storage Upgrade Plant; Savannah River Site, Aiken, SC; Pantex Plant, Amarillo, TX

ACCESSION NUMBER: 0014

DOCUMENT TYPE: RT

TITLE: **Fissile Materials Disposition Program Alternative Technical Summary Report: Electrometallurgical Treatment Variant**

ORIG. DOC. NO.: UCRLID122664; L202201

DOCUMENT DATE: 960826

ORIGINATING AGENCY: Lawrence Livermore National Laboratory, Livermore, CA

PAGES: 0063

REEL: FRAME:

AUTHORS: Gray L W

ABSTRACT: The Department of Energy (DOE) is examining options for placing weapons-usable surplus nuclear materials, principally plutonium (Pu) and highly enriched uranium (HEU), in a form or condition that is inherently unattractive and inaccessible for use in weapons either by the host country or by a subnational group. The potential environmental impacts of technologies to implement this objective for plutonium are described in the Fissile Materials Disposition (MD) Program's *Storage Disposition of Weapons-Usable Fissile Materials Programmatic Environmental Impact Statement* (PEIS). The PEIS is only part of the process of arriving at a Record of Decision (ROD) for the Fissile Materials Disposition Program (FMDP). In Phase I of this process, a number of options were eliminated from further consideration. The surviving options can be grouped into three groups of variants treated as

reasonable in the PEIS: 1) Plutonium burning in a once-through reactor cycle as mixed oxide (MOX) fuel followed by disposal in a repository, 2) Immobilization or fixation in an acceptable matrix to create an environmentally benign form for disposal in a repository, and 3) Disposal in deep boreholes (with or without prior fixation). In Phase II of this process, variants of these alternatives are being examined in more detail to provide more complete information desired for an ROD which includes consideration of technical viability, cost, schedule, and other factors.

**KEYWORDS: PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT (PEIS), NUCLEAR MATERIALS, PLUTONIUM, URANIUM, ZEOLITE, ELECTROMETALLURGICAL TREATMENT, STORAGE SAFEGUARDS**

**CROSSINDEX:**

**PROVENANCE:**

**LOCATIONS: Lawrence Livermore National Laboratory, Livermore, CA**

**ACCESSION NUMBER: 0015**

**DOCUMENT TYPE: RT**

**TITLE: Fissile Materials Disposition Program Alternative Technical Summary Report: Ceramic Can-in-Canister Variant**

**ORIG. DOC. NO.: UCRLID122661; L202191**

**DOCUMENT DATE: 960826**

**ORIGINATING AGENCY: Lawrence Livermore National Laboratory, Livermore, CA**

**PAGES: 0077**

**REEL: FRAME:**

**AUTHORS: Gray L W**

**ABSTRACT:** The Department of Energy (DOE) is examining options for placing weapons-usable surplus nuclear materials, principally plutonium (Pu) and highly enriched uranium (HEU), in a form or condition that is inherently unattractive and inaccessible for use in weapons either by the host country or by a subnational group. The potential environmental impacts of technologies to implement this objective for plutonium are described in the Fissile Materials Disposition (MD) Program's *Storage Disposition of Weapons-Usable Fissile Materials Programmatic Environmental Impact Statement* (PEIS). The PEIS is only part of the process of arriving at a Record of Decision (ROD) for the Fissile Materials Disposition Program (FMDP). In Phase I of this process, a number of options were eliminated from further consideration. The surviving options can be grouped into three groups of variants treated as reasonable in the PEIS: 1) Plutonium burning in a once-through reactor cycle as mixed oxide (MOX) fuel followed by disposal in a repository, 2) Immobilization or fixation in an acceptable matrix to create an environmentally benign form for disposal in a repository, and 3) Disposal in deep boreholes (with or without prior fixation). In Phase II of this process, variants of these alternatives are being examined in more detail to provide more complete information desired for an ROD which includes consideration of technical viability, cost, schedule, and other factors.

**KEYWORDS: PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT (PEIS), NUCLEAR MATERIALS, PLUTONIUM, URANIUM, STORAGE SAFEGUARDS, CERAMIC CAN-IN-CANISTER VARIANT**

**CROSSINDEX:**

**PROVENANCE:**

**LOCATIONS: Lawrence Livermore National Laboratory, Livermore, CA**